

REMARKS

Claims 1-4 are pending. Claims 5-8 have been cancelled without prejudice or disclaimer as to Applicants' right to pursue the subject matter of these claims in a continuing application. Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

**Double Patenting**

Claims 1-4 were rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-6 of co-pending Application No. 09/988,830. Applicants will file a Terminal Disclaimer once this application is in otherwise allowable condition.

**Claim Rejections Under 35 U.S.C. § 103**

A. Claims 1-3 were rejected under 35 U.S.C. § 103(a) over Hase et al. (U.S. Patent No. 6,252,648) in view of Somekh (U.S. Patent No. 6,394,109). Applicants respectfully traverse this rejection.

Claim 1 recites, in part, a lithographic projection apparatus which includes a gas supply to supply a purge gas which comprises molecular oxygen at a total partial pressure of from  $1 \times 10^{-4}$  Pa to 1 Pa. As indicated in the Office Action, Hase does not teach the total partial pressure between  $1 \times 10^{-4}$  Pa to 1 Pa. The Office Action relies on Somekh as teaching that the flow rate and pressure of oxygen are introduced at predetermined values (column 5, lines 39-45) and alleges that the partial pressure of oxygen recited in claim 1 would have been obvious to one of ordinary skill in the art. Applicants respectfully disagree.

Applicants submit that the partial pressure of oxygen being between  $1 \times 10^{-4}$  Pa to 1 Pa is not an obvious design choice. However, even if the range of partial pressure recited in claim was merely a design choice, Somekh teaches that that the flow rate and pressure of oxygen are introduced at predetermined values into the illumination chamber and the process chamber (column 5, lines 39-45). Somekh further teaches (column 4, lines 45-52) that the illumination chamber and process chamber are maintained under a vacuum having a total pressure of between  $10^{-6}$  Torr and  $10^{-9}$  Torr. It does not teach anything regarding partial pressure. There is simply no disclosure about how the amount of oxidizers compares to the other components of the atmosphere inside the chamber (e.g., CO or CO<sub>2</sub> (column 4, lines 57-58), contaminants, air, etc.) If these values are converted to units of Pascal for ease of comparison (1Torr = 133.32 Pascal), it is apparent that the pressure range of the illumination

and process chambers disclosed by Somekh are between  $1.3332 \times 10^{-4}$  Pascal and  $1.3332 \times 10^{-7}$  Pascal. Therefore, since Somekh discloses that the total pressure of the chambers is less than  $1.3332 \times 10^{-4}$  Pascal, it would not be obvious to a person skilled in the art to introduce an oxidizer with a total partial pressure of between  $1 \times 10^{-4}$  and 1 Pascal. In fact, Somekh teaches that a lower pressure is critical and therefore teaches away from the relatively higher partial pressure claimed in the present invention. (see Abstract “a required sub-atmospheric pressure”). As would be understood by a person skilled in the art, this very low pressure is required in an electron-beam apparatus because electrons are easily scattered by even a low pressure atmosphere.

Furthermore, the Office Action, on page 6, relies on column 5, lines 52-55 of Somekh’s recitation that “the selection of the oxidizer must be made keeping in mind that the oxidizer should not corrode or damage other components of the lithography system”. Applicants submit that this recitation pertains to the selection of the particular oxidizer and not to the acceptable range of the partial pressure of oxygen. Accordingly, even the overly broad interpretation of the holding of *In re Aller*, 105 USPQ 233 in the Office Action (on page 6) can not be satisfied by any combination of Hase and Somekh.

Furthermore, as previously indicated, Hase is directed to a cleaning system which uses an inert gas and a small amount of oxygen in a closed space to clean an organic compound from a lens by producing ozone. For example, Hase solves the problem of ammonium sulfate deposits (column 1, line 48), carbon deposits and other organic deposits (column 1, line 67) by using ozone to remove them. In contrast, Somekh discloses an apparatus for removing carbon from a charged particle beam lithography system. Somekh’s charged particle system requires that imaging take place in an extremely low pressure environment as generally understood by one of ordinary skill in the art of particle beam lithography systems. Thus, Somekh’s cleaning system cannot be combined with Hase’s relatively high-pressure inert gas purge system. Furthermore, although the Advisory Action asserts that Somekh is used to “merely teach that a molecular oxygen purge gas can be used within a lithography system”, Applicant submits that the rejection actually relies on the Somekh for the molecular oxygen and for the partial pressure range. Although the Advisory Action continues to assert that these two references are combinable, a person skilled in the art would not be motivated to combine the teachings of Hase’s relatively high pressure cleaning system with the relatively low pressure particle beam lithography system of Somekh. Accordingly, there is no

motivation to modify the system of Hase by using the carbon removing cleaning system of Somekh since it would render Hase's device less useful.

In response, the Office Action reminds the Applicants with reference to *In re Keller*, 642 F.2d 413, that one "cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references". Applicants submit that the above argument did not individually attack the references. Rather the argument points to the individual teachings of Hase and Somekh and then rebuts the alleged motivation to combine the two. Specifically, there is no teaching in Hase or Somekh that would motivate a person skilled in the art to look at the other reference for additional teaching. A person of ordinary skill in the art would know that since Hase is directed to a relatively high pressure system and Somekh is directed to a relatively low pressure system, the teaching of one reference would not be combinable with the teaching of the other.

Accordingly, no combination of Hase and Somekh teaches or suggests a lithographic projection apparatus which includes a gas supply to supply a purge gas which comprises molecular oxygen at a total partial pressure of from  $1 \times 10^{-4}$  Pa to 1 Pa, as recited in claim 1.

Claims 2 and 3 are believed allowable for at least the reasons presented above with respect to claim 1 by virtue of their dependence upon claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-3 under 35 U.S.C. § 103(a) over Hase in view of Somekh.

**B.** Claim 4 was rejected under 35 U.S.C. § 103(a) over Hase in view of Somekh and further in view of Akagawa et al. (U.S. Patent No. 6,288,769). Applicants respectfully traverse this rejection.

Claim 4 is believed allowable for at least the reasons presented above with respect to claim 1 by virtue of its dependence upon claim 1. Akagawa fails to overcome the deficiencies of Hase and Somekh noted above. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 4 under 35 U.S.C. § 103(a) over Hase in view of Somekh and further in view of Akagawa.

### **Conclusion**

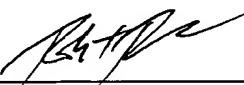
In view of the foregoing, the claims are believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best

resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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